Space Weather Forecast

Issued on Friday 8 November 2024 at 01:22 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate solar activity with a chance of X-class flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate, with several Moderate-class flares. These flares have predominantly originated from a moderately sized but magnetically complex region near centre disc, along with another moderately sized region, potentially magnetically complex, region in the far southeast of the visible disc.

There are currently seven other sunspot regions on the visible disc, these smaller, magnetically simpler and generally either stable or showing only limited change.

No Earth directed CMEs (Coronal Mass Ejections) were observed in available imagery.

Solar Wind / Geomagnetic Activity: Solar winds returned to background levels following a recent fast wind enhancement from a coronal hole. Speeds decreased from 460km/s to around 380km/s. The Interplanetary Magnetic Field was Weak throughout, with the important north-south component varying weakly between positive and negative directions. Geomagnetic Activity was Quiet (Kp0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background levels through the period.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity is forecast to continue, with occasional Moderate-class flares expected and a chance of isolated Strong flares, with the regions located in the southern hemisphere considered the most likely sources.

Solar Wind / Geomagnetic Activity: A minor CME enhancement is possible at Earth early today (08 Nov) but with low confidence given that only a glancing impact is expected.

Solar winds are currently at normal background levels. A weak solar wind enhancement is considered likely later today (08 Nov) or on Day 2 (09 Nov), with slightly elevated wind speeds at peak. There is a chance for further possible fast wind enhancements to occur, bringing slightly elevated or elevated levels on Days 2 and 3 (09 and 10 Nov) from a larger but much more southerly located coronal hole feature.

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Mainly Quiet to Unsettled activity is expected, but with isolated Active intervals likely due to occasional solar wind enhancements and CME influences, with a slight chance of Minor geomagnetic storms until late day 3 (10th).

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is at background levels. There is a slight chance of S1/Minor Proton Storms or greater on Days 1-2 (08-09 Nov), rising to a chance from Day 3 (10 Nov) as the significant regions on the facing-disc rotate into more geo-effective positions.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	**G1 to G2**	No	30	30	30	10
Strong	**G3**	No	1	1	1	1
Severe	**G4**	No	1	1	1	1
Extreme	**G5**	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**R1-R2 (M Class)**	Yes	90	90	90	90
Very Active	**R3-R5 (X Class)**	No	25	25	25	25

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Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	15	15	20	25
Very Active	**≥ S3 ***	No	1	1	1	0
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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